



Overview of data for conservation planning



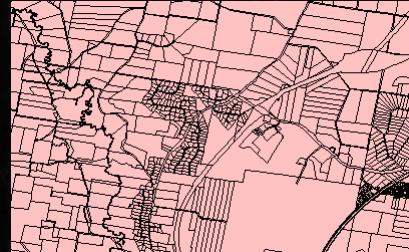
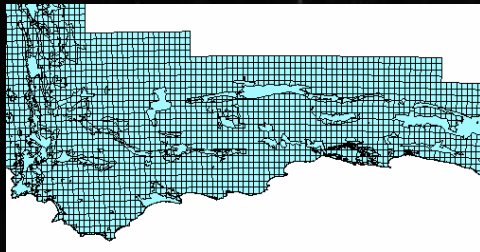
Important types of data include:

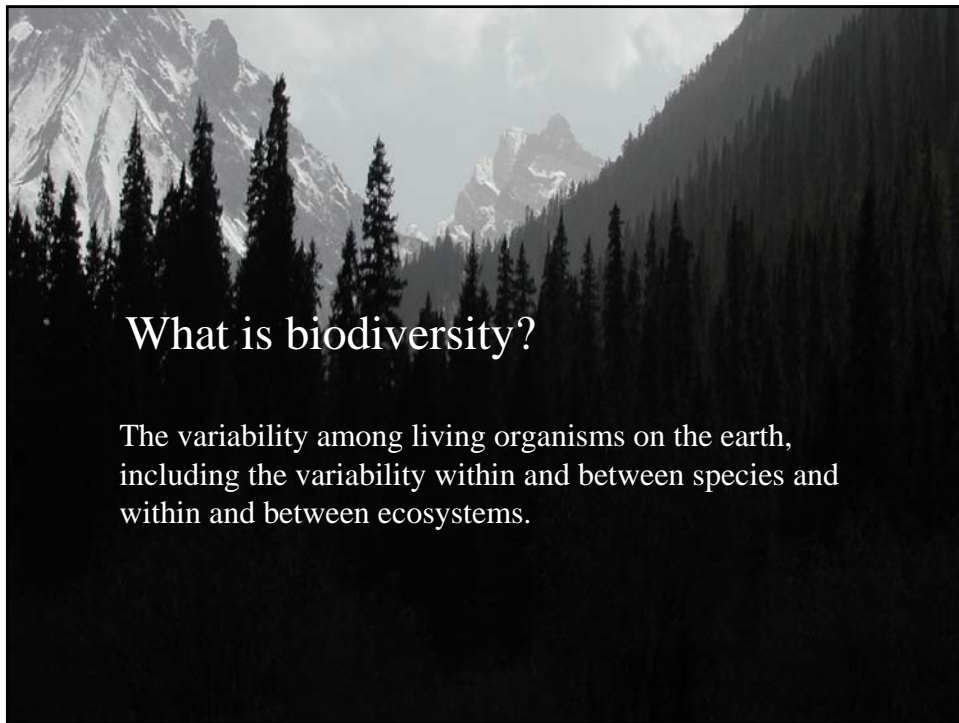
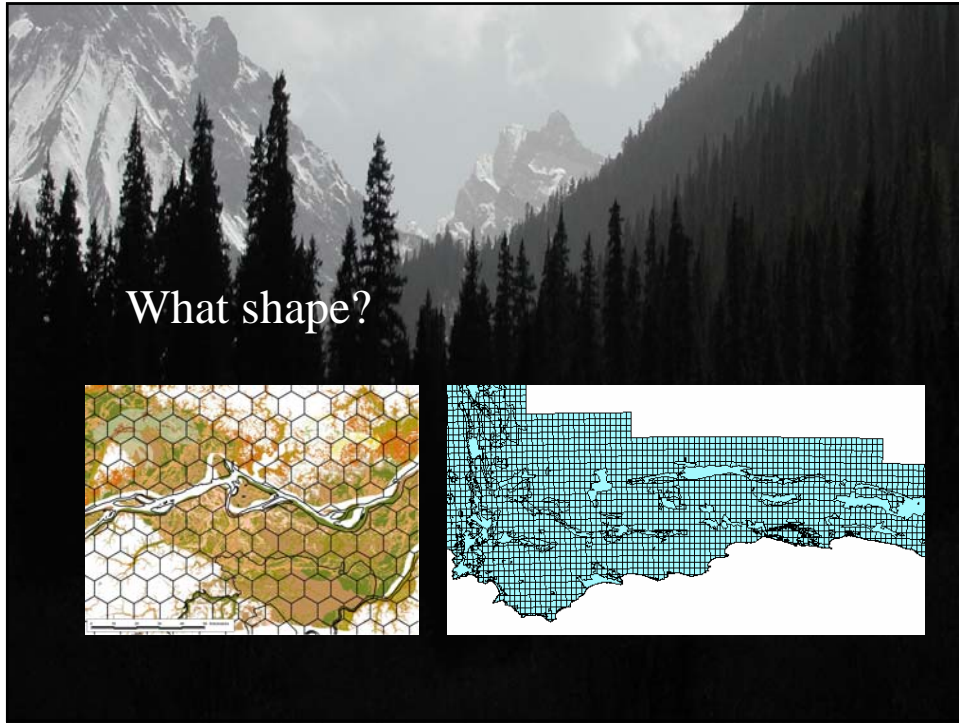
- Planning units
- Maps of biodiversity features
- Maps of threat (or vulnerability)
- Condition
- Costs

Key decisions about planning units

- Artificial (e.g. grids) or actual units of management (e.g. ownership parcels)
- If artificial, then size (issues include resolution of underlying data, translation into actual units of management on the ground, efficiency of representation, design, processing time)
- If artificial, then shape
- If artificial, then alignment with boundaries of existing reserves

Artificial or actual?







Four problems with biodiversity data

1. Most species (millions) have not been described (mainly invertebrates and non-vascular plants)
2. Genetic variation within most described species is poorly known at best
3. Surveys of known species are highly biased toward vascular plants and vertebrates
4. Surveys of known species are highly biased spatially



Table 1. Biodiversity surrogates for conservation planning

Generic surrogates

Biodiversity pattern

- Observed species distributions
 - Range maps—polygons^b
 - Range maps—gridded atlas data^c
 - Point locality records^d
 - Densities of individuals^e

Predicted species distributions

- Nonstatistical models^f
- Statistical models^g

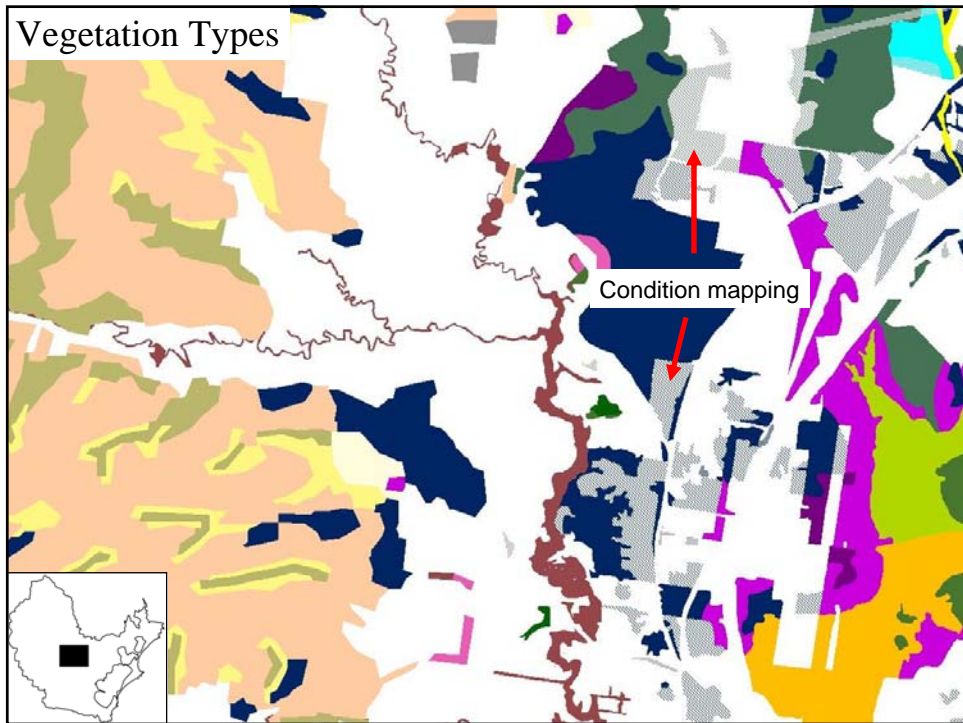
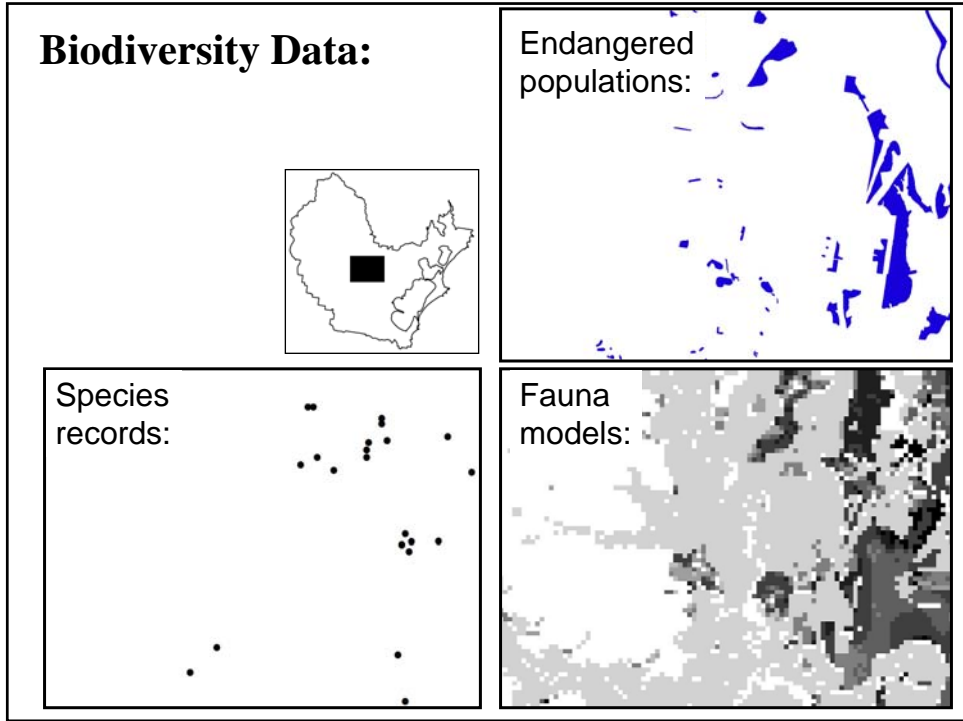
Land-type polygons

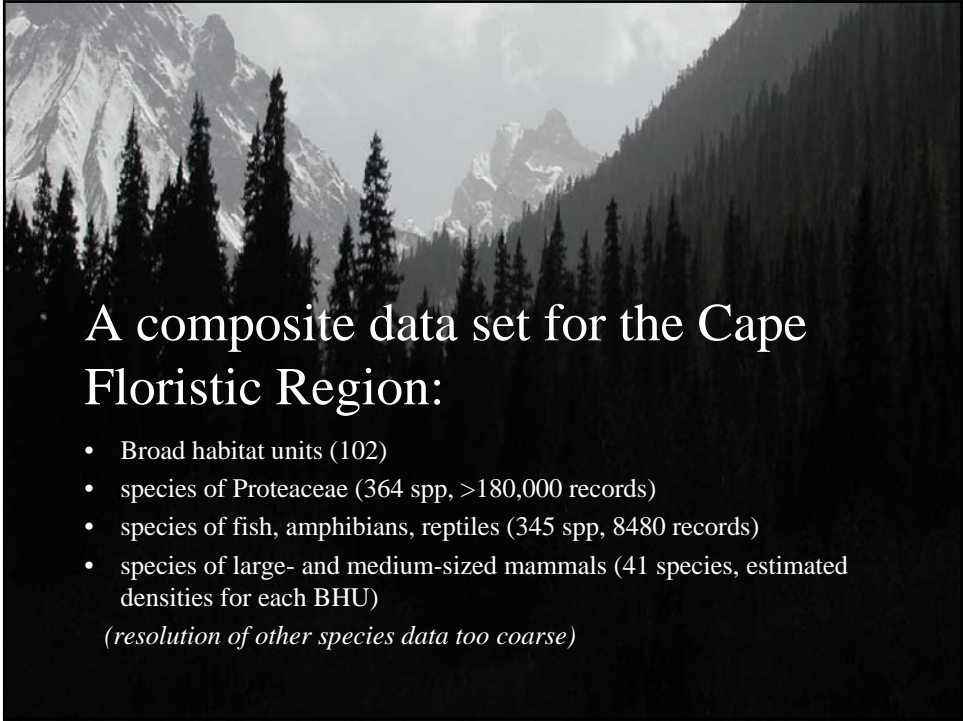
- Intuitive classifications^b
- Numerical classificationsⁱ

Environmental space^j

Biodiversity process^k

- Biophysical templates^l
- Qualitative design criteria^m
- Quantitative design criteriaⁿ

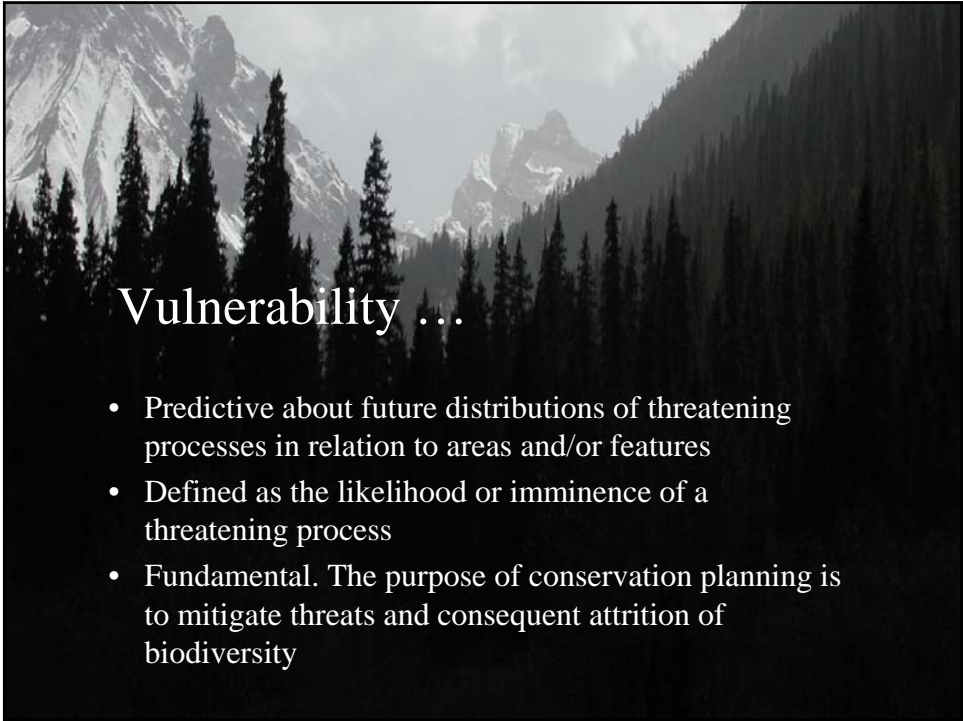




A composite data set for the Cape Floristic Region:

- Broad habitat units (102)
- species of Proteaceae (364 spp, >180,000 records)
- species of fish, amphibians, reptiles (345 spp, 8480 records)
- species of large- and medium-sized mammals (41 species, estimated densities for each BHU)

(resolution of other species data too coarse)



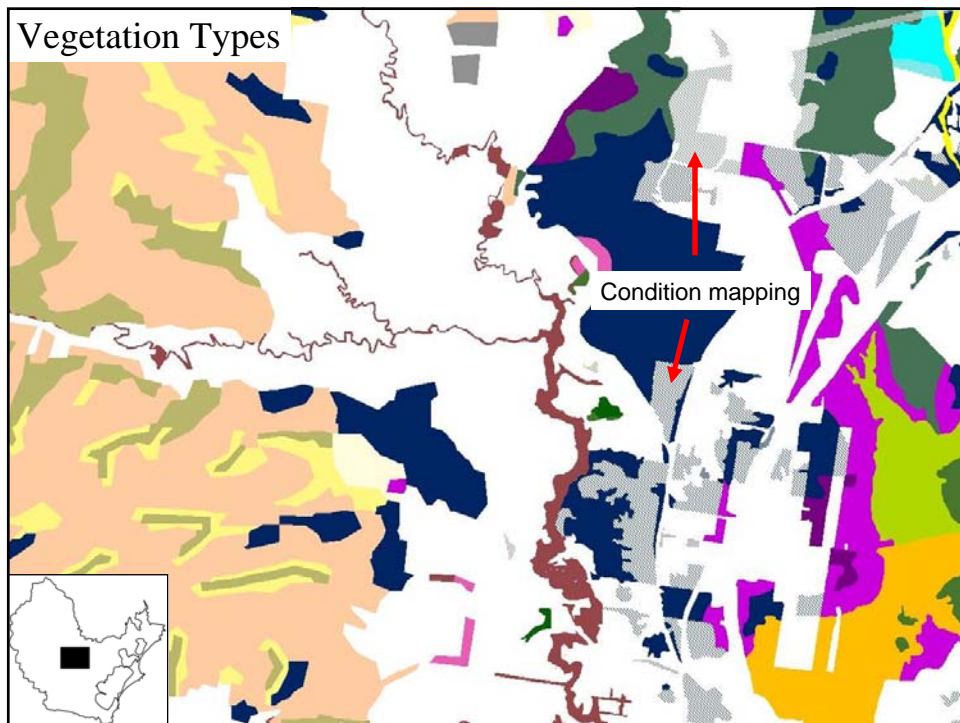
Vulnerability ...

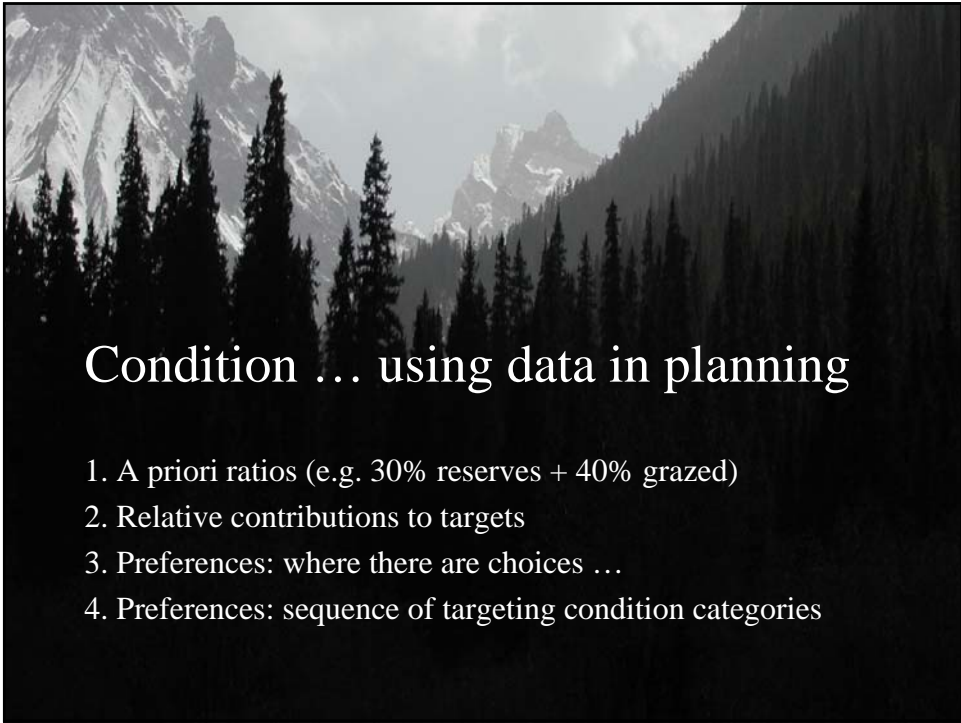
- Predictive about future distributions of threatening processes in relation to areas and/or features
- Defined as the likelihood or imminence of a threatening process
- Fundamental. The purpose of conservation planning is to mitigate threats and consequent attrition of biodiversity



Condition ...

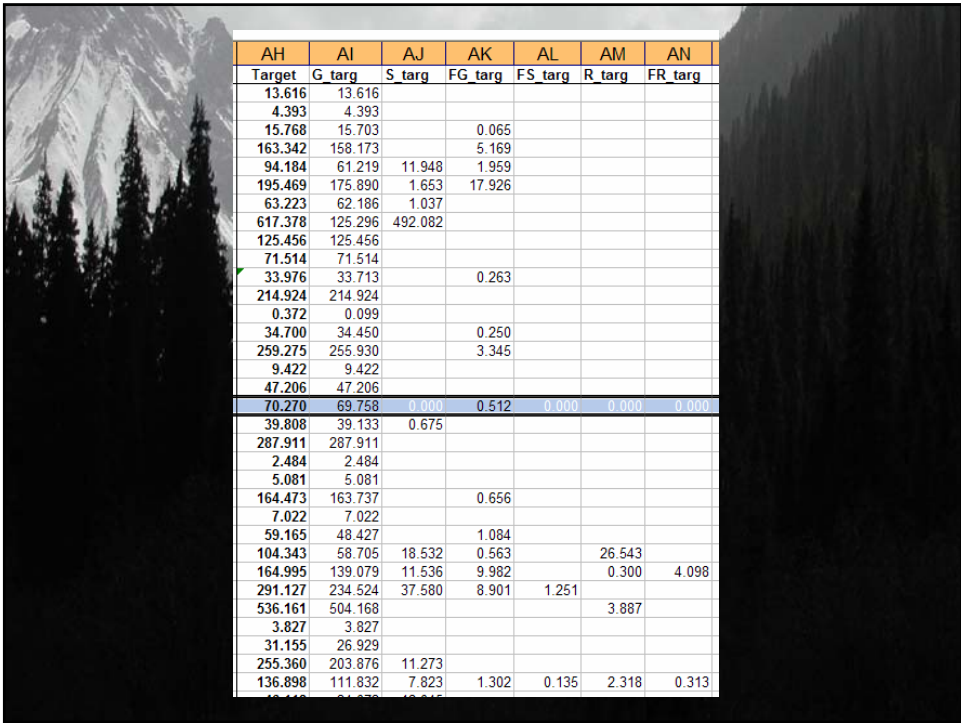
- Also known as integrity, quality etc.
- What do we mean by these terms?
- Are they related to biodiversity values, management liabilities, or something else?
- How do we compile spatial data on condition?
- What do we know about temporal trends?





Condition ... using data in planning

1. A priori ratios (e.g. 30% reserves + 40% grazed)
2. Relative contributions to targets
3. Preferences: where there are choices ...
4. Preferences: sequence of targeting condition categories



AH	AI	AJ	AK	AL	AM	AN
Target	G targ	S targ	FG targ	FS targ	R targ	FR targ
13.616	13.616					
4.393	4.393					
15.768	15.703		0.065			
163.342	158.173		5.169			
94.184	61.219	11.948	1.959			
195.469	175.890	1.653	17.926			
63.223	62.186	1.037				
617.378	125.296	492.082				
125.456	125.456					
71.514	71.514					
33.976	33.713		0.263			
214.924	214.924					
0.372	0.099					
34.700	34.450		0.250			
259.275	255.930		3.345			
9.422	9.422					
47.206	47.206					
70.270	69.758	0.000	0.512	0.000	0.000	0.000
39.808	39.133	0.675				
287.911	287.911					
2.484	2.484					
5.081	5.081					
164.473	163.737		0.656			
7.022	7.022					
59.165	48.427		1.084			
104.343	58.705	18.532	0.563		26.543	
164.995	139.079	11.536	9.982		0.300	4.098
291.127	234.524	37.580	8.901	1.251		
536.161	504.168				3.887	
3.827	3.827					
31.155	26.929					
255.360	203.876	11.273				
136.898	111.832	7.823	1.302	0.135	2.318	0.313

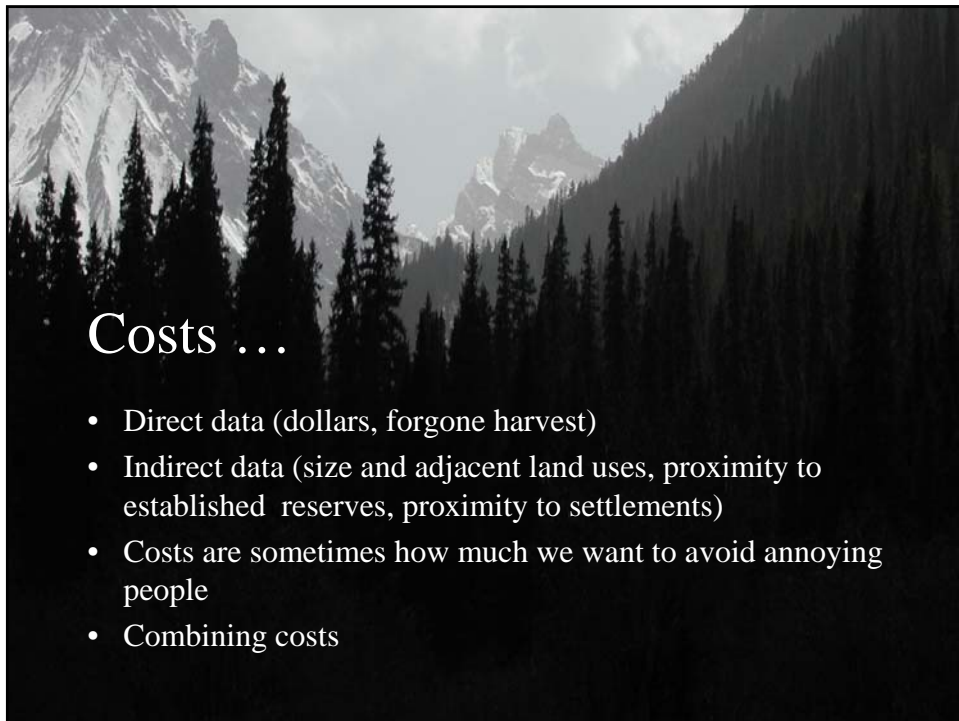


Costs ...

What do we mean by costs?

1. Acquisition costs
2. Transaction costs
3. Opportunity / stewardship costs
4. Management / restoration costs
5. Damage costs

What about the costs of assessment and planning?



Costs ...

- Direct data (dollars, forgone harvest)
- Indirect data (size and adjacent land uses, proximity to established reserves, proximity to settlements)
- Costs are sometimes how much we want to avoid annoying people
- Combining costs